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EXAMINER
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BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/856,335	<b>Applicant(s)</b> LUGSCHEIDER, ERICH	
	<b>Examiner</b> Katherine A. Bareford	<b>Art Unit</b> 1762	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/2/03.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 2-9, 15-21, 23, 25-27 and 29-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 10, 12, 14, 24, 28 and 32-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

*Claims 11, 13 and 22 are canceled.*

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
     a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 2, 2003 has been entered.

The amendment to the claims filed with the RCE submission of October 2, 2003 has been entered and considered.

The Examiner notes that claims 2-9, 15-21, 23, 25-27 and 29-31 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 13 (October 30, 2002).

### *Specification*

2. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

An abstract provided on a separate sheet should be provided.

3. The disclosure is objected to because of the following informalities: (1) at page 1, after the title, applicant should insert that this case is a national stage application of PCT/EP99/09140,

filed November 25, 1999. (2) Appropriate headings, such as "Background of the Invention", "Brief Description of the Specification", etc. should be provided where appropriate in the specification. (3) the Examiner notes that the material of the specification starting at page 3, line 16 "In accordance with the invention, for applying the wear-resistant. . ." and running through page 3b, line 3" is a duplicate of the material at pages 3c, line 7, through page 5, line 3.

Appropriate correction is required.

#### *Claim Objections*

4. The objection to claims Claim 11 and 13 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim is withdrawn due to applicant's cancellation of claims 11 and 13 by the amendment of October 2, 2003.

#### *Claim Rejections - 35 USC § 112*

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1, 10, 12, 14, 24, 28 and 32-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 was amended by the October 2, 2003 amendment to require that the coating layer produced be less than 250 microns thick. This is new matter.

In the Remarks of the October 2, 2003 amendment, applicant argues that this thickness requirement is supported by (1) Example 1 in the specification provides a coating thickness of 0.2 to .5 (200 to 500 microns) (page 9, line 28 of the specification), and the value of 250 microns as in claim 1 is within the mentioned interval. Additionally, the deposited layer of Example 1 is ground after deposition, which means that the thickness of the layer is further reduced. (2) applicant further argues that the present invention requires a height of at least two mono-layers, and since the grain size of the powder spray material is described to lie between 0.05 and 150 microns (preferably between 0.1 and 120 microns), providing that a two layer thickness would have an upper limit of 250 microns. (3) Applicant argues that a layer of thickness 250 microns or less is considered to be a "thin layer" by a person skilled in the art when it comes to surface coatings of mechanical parts.

The Examiner has reviewed these arguments, however, the rejection is maintained. (1) As to the coating thickness of Example 1, the Examiner has reviewed the specification, and the only thickness mention found of a range that would include 250 microns is this description in Example 1 of 200 to 500 microns. However, this description does not provide support for the range now claimed, since the range now claimed is "less than 250 microns", which would include a thickness of, for example 100 microns or 10 microns, and is clearly outside the range taught by Example 1. As to an amount "ground" off as described in Example 1, the example has no teaching or suggestion as to how much would be ground off. (2) As to the argument of the two

or more layers thickness allowed, with a grain size of 0.05 and 150 microns, providing, apparently a minimum thickness of 0.1 to 300 microns, the Examiner disagrees with this argument. There is no indication in the specification or claims as originally filed that a coating provided by a two layer process is necessarily an acceptable coating. All described thicknesses are greater than 200 microns. Thus, the description of grain size does not provide a minimum coating thickness as claimed. (3) As to the argument that a layer of 250 microns or less is considered "thin", applicant has provided no support for this argument, and in fact all coatings described in the specification with a provided thickness are greater than 200 microns in thickness.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 34 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 34, line 4, "thermal spraying" is confusing as worded, because at line 2, it is indicated that the listed species are a subset of the generic "thermal spraying". As a result, "thermal spraying" would not be a subset of "thermal spraying".

*Double Patenting*

9. Applicant is advised that should claim 28 be found allowable, claim 33 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

In this case both claims 28 and 33 claim that the material to be sprayed has more than 30% by weight magnetite.

*Claim Rejections - 35 USC § 103*

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 10, 12, 14, 24, 28 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al (US 5143746) in view of Savkar et al (US 5047612).

Inoue teaches a process for producing a wear resistant layer on a substrate by spraying an iron oxide based material to the substrate. Column 1, lines 5-20. The material to be sprayed can be 100 percent magnetite. Column 2, lines 5-15, column 4, lines 35-65 and column 5, lines 15-30. The material can be thermally sprayed by a plasma spraying process. Column 3, lines 50-68 and column 5, lines 30-68 (see the methods of Table 1 and 2). The material can be sprayed

in the form of a powder. Column 4, lines 45-60 and column 5, lines 30-68 (see the particle sizes of Tables 1 and 2). Because of the material sprayed and the layer provided the coating would inherently be corrosion resistant. The applied coating can be homogenous. Column 4, lines 1-10. The applied coating can be a thin layer of less than 250 microns in thickness, i.e. 150 microns in thickness. See column 4, lines 45-60 and column 5, Table 2, Example 1, indicating a magnetite coating plasma sprayed to a thickness of about 150 microns.

Claim 12: the spray process can be a water plasma spray process. Column 3, line 65 through column 4, line 2 and column 5, lines 30-68 (see the methods of Tables 1 and 2).

Claims 14, 28, 33: the material can be 100 percent magnetite or pure magnetite. Column 2, lines 5-15, column 4, lines 35-65 and column 5, lines 15-30.

Claim 24: the powder size can be 5-40 or 40-100 or 40-150 microns, for example. See column 5, lines 30-68 (see the particle sizes of Table 1 and 2).

Claim 32: the powder size can be 5-40 or 40-100 microns, for example. See column 5, lines 30-68 (see the particle sizes of Table 1 and 2).

Claim 35: The material can be sprayed by a plasma spraying process. Column 3, lines 50-68 and column 5, lines 30-68 (see the methods of Table 1 and 2).

Inoue teaches all the features of these claims except the on-line monitoring and control system (claim 1+), with monitoring of the amount of powder fed (claim 10).

However, Savkar teaches a method and apparatus for controlling the deposition of a powder in a plasma spray process, where the spray process is monitored by an on-line system. See column 1, lines 5-15 and 50-68. The system monitors the impact point of the material forming



the layer of material on the substrate. See column 3, lines 15-30 and column 4, lines 45-60 and figure 1. The system also provides on-line monitoring and control of the powder feed rate to the plasma flame. See figure 1 and column 5, line 60 through column 6, line 15. This system provides for optimized deposition of the coating on the target substrate. See column 2, lines 15-50.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue to use the on-line monitoring and control system suggested by Savkar in order to provide optimized deposition of the coating onto the substrate because Inoue teaches a plasma spray system of depositing magnetite onto a substrate surface and Savkar teaches the desirability of using an on-line monitoring and control system when plasma spraying in order to optimize the deposition of the coating.

12. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue in view of Savkar as applied to claims 1, 10, 12, 14, 24, 28 and 32 above, and further in view of Yoshinaka et al (US 5158643).

Inoue in view of Savkar teaches all the features of this claim except the air as plasma gas. Inoue does teach that the spray coating is conducted in a neutral gas atmosphere not having an extreme oxidizing or reducing nature. See column 3, lines 50-55. For example, argon or mixtures of argon and nitrogen are used. See column 3, lines 55-60.

Yoshinaka teaches that when plasma spraying material, it is conventional known to provide plasma fueled by air, argon, hydrogen or helium, etc. see column 9, lines 45-55.

It would have been obvious to one of ordinary skill in the art to modify Inoue in view of Savkar to use air as part of the plasma fuel gas as suggested by Yoshinaka with an expectation of desirable results, because Inoue in view of Savkar teaches using a plasma gas such as argon/nitrogen to provide an atmosphere that is not of an extreme oxidizing or reducing nature, and Yoshinaka teaches that it is conventionally known to use air as part of plasma gas mixture. While air would be oxidizing, one of ordinary skill in the art would understand that it could be mixed with the described argon/nitrogen to provide a not "extreme" oxidizing mixture, which would allow for a more cost efficient gas.

13. Nakamura also teaches that magnetite can be plasma sprayed to form a coating layer of less than 250 microns thick (100 microns). See column 2, lines 3-25.

#### *Priority*

14. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on Nov. 25, 1998. It is noted, however, that applicant has not filed a certified copy of the 198 54 512.6 application as required by 35 U.S.C. 119(b).

The only priority document received was a copy of 198 57 737.0, filed Dec. 15, 1998.

#### *Response to Arguments*

15. Applicant's arguments filed October 2, 2003 have been fully considered but they are not persuasive.

*Applicant's Arguments*

Applicant argues by providing that the coating must be homogeneous and less than 250  
microns thick, the Examiner's grounds for rejection are overcome. The Examiner further notes  
that applicant has previously argued that Inoue teaches the deposition of a thick coating and  
teaches away from a thin coating as deposited by applicant. Furthermore, a uniform layer is not  
required by Inoue. Furthermore, applicant previously argued that Savkar teaches a monitoring  
performed by controlling the feed rate of the powder and carrier gas and the amount of carrier  
gas, while in the present invention, many parameters are measured to provide a sophisticated  
feedback control. Savkar does not provide a teaching necessary to produce a thin, uniform  
magnetite layer as provided by the present application.

*The Examiner's Response*

The Examiner has reviewed these arguments, however, the rejection is maintained. While  
applicant has argued that Inoue and Savkar do not teach or suggest the thin, uniform magnetite  
layer of the present invention, the Examiner notes that a review of Inoue shows that it teaches a  
homogeneous coating is provided. See column 4, lines 3-5 (teaching a homogeneous coating) and  
also that a 100 percent magnetite coating is sprayed with only a small amount of impurities (see  
Table 1). As to the thickness of the coating, the Examiner notes that Inoue provides a specific  
example (Example 1 in Table 2), with a coating thickness of less than 250 microns (a coating of  
150 microns). Thus, the two features added by applicant to claim 1 are both provided by Inoue.  
As to applicant's previous arguments that the present invention uses a different monitoring than  
Savkar, the Examiner notes that the specific monitoring features are not in the examined claims.

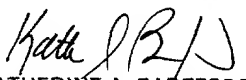
Looking at the claims as worded, the Examiner finds that one of ordinary skill in the art would desire to optimize the deposition of Inoue by providing a on-line monitoring and control system to provide an optimized coating, regardless of thickness, as suggested by Savkar.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:30-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
KATHERINE A. BAREFORD  
PRIMARY EXAMINER  
GROUP 1100/700